

### **REMARKS/ARGUMENTS**

This Amendment is submitted in reply to the Office Action dated February 20, 2008, and within the three month period extending to May 20, 2008.

Claims 1, 4, 7, 9, 18, 20, and 22-26 are currently amended.

5        Claims 3, 5, 10, 12, 19, and 21 are cancelled.

Claims 1-2, 4, 6-9, 11, 13-18, 20, and 22-26 remain pending.

#### **Rejections under 35 U.S.C. 101**

10        Each of claims 18, 20, and 22-26 has been amended to recite a computer readable storage medium. The Applicant submits that each of amended claims 18, 20, and 22-26 is directed to statutory subject matter as defined by 35 U.S.C. 101. Therefore, the Office is requested to withdraw the rejections of claims 18, 20, and 22-26 under 35 U.S.C. 101.

#### **Rejections under 35 U.S.C. 102**

15        Claims 1-2, 6, 8-9, 13, 15-18, 22, and 24-26 were rejected under 35 U.S.C. 102(e) as being anticipated by Chilimbi et al. ("Chilimbi" hereafter) (U.S. Patent No. 7,140,008). These rejections are traversed.

20        Claim 1 has been amended to clarify that the first trigger condition is an elapsed time of execution of the original set of instructions. Claim 1 has been amended to also clarify that the second trigger condition is an elapsed time of execution of the instrumented version of the original set of instructions. Amended claim 1 further clarifies that each of the first trigger condition and the second trigger condition is a respective temporal period defined independently from an instruction present in either the original set of instructions or the instrumented version of the original set of instructions.

In contrast to amended claim 1, Chilimbi (column 7, lines 25-28) teaches that execution transitions from the checking code 330 to the instrumented code 320 "when the checking phase counter (nCheck) reaches zero." Chilimbi (column 7, lines 17-19) teaches that the checking phase counter (nCheck) is decremented at every entry check 340 and  
5 back-edge check 341 during execution within the checking code 330. Chilimbi (column 7, lines 5-6) teaches that checks 340-341 are placed at procedure entry and loop back-edges. Therefore, it should be understood that transition from the checking code 330 to the instrumented code 320, in the method of Chilimbi, occurs when the checking phase counter (nCheck) is decremented to zero, wherein the checking phase counter (nCheck) is  
10 decremented at each procedure entry and at each procedure loop back-edge.

It should be further understood that decrementation of the checking phase counter (nCheck) to zero does not define an elapsed time of execution of the checking code 330, as each decrement of the checking phase counter (nCheck) is dependent upon encountering particular instructions within the checking code 330, i.e., is dependent upon  
15 encountering procedure entry instructions and procedure loop back-edge instructions. Therefore, in contrast to the Office's assertions, Chilimbi's teachings regarding transition from the checking code 330 to the instrumented code 320 upon decrementation of the checking phase counter (nCheck) to zero does not teach the feature of amended claim 1 regarding switching execution from the original set of instructions to the instrumented  
20 version of the original set of instructions upon encountering a first trigger condition, wherein the first trigger condition is an elapsed time of execution of the original set of instructions.

Additionally, amended claim 1 recites that the first trigger condition is a temporal period defined independently from an instruction present in either the original set of  
25 instructions or the instrumented version of the original set of instructions. As discussed

above, the decrementation of the checking phase counter (nCheck) of Chilimbi occurs at each procedure entry and at each procedure loop back-edge in the checking code 330. Therefore, decrementation of the checking phase counter (nCheck) to zero in the method of Chilimbi is directly dependent upon procedure entry and procedure loop back-edge instructions present in the checking code 330. Consequently, decrementation of the checking phase counter (nCheck) to zero, as disclosed by Chilimbi, does not teach a first trigger condition that is a temporal period defined independently from an instruction present in either the original set of instructions or the instrumented version of the original set of instructions, as recited in amended claim 1.

In further contrast to amended claim 1, Chilimbi (column 7, lines 40-44) teaches that execution transitions from the instrumented code 320 back to the checking code 330 "when the profiling phase counter (nlnstr) reaches zero." Chilimbi (column 7, lines 33-36) teaches that the profiling phase counter (nlnstr) is decremented at every entry check 340 and back-edge check 341 during execution within the instrumented code 320. Chilimbi (column 7, lines 5-6) teaches that checks 340-341 are placed at procedure entry and loop back-edges. Therefore, it should be understood that transition from the instrumented code 320 to the checking code 330, in the method of Chilimbi, occurs when the profiling phase counter (nlnstr) is decremented to zero, wherein the profiling phase counter (nlnstr) is decremented at each procedure entry and at each procedure loop back-edge.

It should be further understood that decrementation of the profiling phase counter (nlnstr) to zero does not define an elapsed time of execution of the instrumented code 320, as each decrement of the profiling phase counter (nlnstr) is dependent upon encountering particular instructions within the instrumented code 320, i.e., is dependent upon encountering procedure entry instructions and procedure loop back-edge

instructions. Therefore, in contrast to the Office's assertions, Chilimbi's teachings regarding transition from the instrumented code 320 to the checking code 330 upon decrementation of the profiling phase counter (nlnstr) to zero does not teach the feature of amended claim 1 regarding switching execution from the instrumented version of the original set of instructions back to the original set of instructions upon encountering a second trigger condition, wherein the second trigger condition is an elapsed time of execution of the instrumented version of the original set of instructions.

Additionally, amended claim 1 recites that the second trigger condition is a temporal period defined independently from an instruction present in either the original set of instructions or the instrumented version of the original set of instructions. As discussed above, the decrementation of the profiling phase counter (nlnstr) of Chilimbi occurs at each procedure entry and at each procedure loop back-edge in the instrumented code 320. Therefore, decrementation of the profiling phase counter (nlnstr) to zero in the method of Chilimbi is directly dependent upon procedure entry and procedure loop back-edge instructions present in the instrumented code 320. Consequently, decrementation of the profiling phase counter (nlnstr) to zero, as disclosed by Chilimbi, does not teach a second trigger condition that is a temporal period defined independently from an instruction present in either the original set of instructions or the instrumented version of the original set of instructions, as recited in amended claim 1.

Additionally, claim 1 recites that the number of instrumentation instructions are dispersed in a substantially uniform manner throughout the instrumented version of the original set of instructions. The Office has asserted that Chilimbi (column 3, line 56, through column 4, line 47, and column 5, line 44, through column 6, line 29) teaches that a number of instrumentation instructions are dispersed in a substantially uniform manner throughout the instrumented version of the original set of instructions. However, the

Applicant finds no such teaching in the cited portions of Chilimbi. More specifically, while Chilimbi teaches use of an instrumented code version of a program, Chilimbi includes no specific teaching with regard to how instrumentation instructions are dispersed within the instrumented code version of the program. The only identifiable  
5 mention of instrumentation code insertion occurs at column 5, lines 53-59, of Chilimbi. However, Chilimbi (column 5, lines 53-59) simply states that "... the program editing tool  
122 inserts the instrumentation and checking code for the low-overhead temporal  
profiling framework by editing an executable or binary version 115 of the program to be  
optimized." Therefore, in contrast to claim 1, the Applicant submits that Chilimbi does  
10 not teach a number of instrumentation instructions dispersed in a substantially uniform  
manner throughout the instrumented version of the original set of instructions.

In view of the foregoing, the Applicant submits that Chilimbi fails to teach each and every feature of amended claim 1. For a claim to be anticipated under 35 U.S.C. 102, each and every feature of the claim must be taught by a single prior art reference.  
15 Therefore, the Applicant submits that amended claim 1 is not anticipated by Chilimbi under 35 U.S.C. 102. Therefore, the Office is requested to withdraw the rejection of amended claim 1 under 35 U.S.C. 102.

Each of amended claims 9 and 18 recites an operation for switching execution  
20 from the original code to an instrumented code after having executed the original code for a specified first time period, and upon reaching a next location of known state in the original code. Each of amended claims 9 and 18 also recites an operation for switching execution from the instrumented code back to the original code after having executed the instrumented code for a specified second time period, and upon reaching a next location  
25 of known state in the instrumented code. Each of amended claims 9 and 18 further recites

that each of the specified first time period and the specified second time period is a respective temporal period defined independently from an instruction present in either the original code or the instrumented code.

The Applicant submits that the arguments presented above with regard to the deficiencies in the teachings of Chilimbi concerning the features of amended claim 1 are equally applicable to the above-identified features recited in each of amended claims 9 and 18. Thus, Chilimbi fails to teach each and every feature of amended claims 9 and 18, respectively, as required for anticipation under 35 U.S.C. 102. Therefore, the Office is requested to withdraw the rejections of amended claims 9 and 18 under 35 U.S.C. 102.

Because a dependent claim incorporates each and every feature of its independent claim, the dependent claim is patentable for at least the same reasons as its independent claim. Therefore, each of dependent claims 2, 6, 8, 13, 15-17, 22, and 24-26 is patentable for at least the same reasons provided for its independent claim. The Office is requested to withdraw the rejections of dependent claims 2, 6, 8, 13, 15-17, 22, and 24-26 under 35 U.S.C. 102.

Additionally, with regard to dependent claims 16 and 25, the Office has asserted that Chilimbi (column 9, lines 3-27) teaches defining a map of instruction addresses, wherein the map of instruction addresses identifies correspondences between instruction addresses in the original code and instruction addresses in the instrumented code. However, beyond simply citing column and line of Chilimbi, the Office has provided no further explanation as to how the cited portions of Chilimbi are believed to teach the map of instruction addresses. Because Chilimbi (column 9, lines 3-27) discusses the call graph 500 of Figure 5, the Applicant interprets the Office's reference to Chilimbi as an assertion that the call graph 500 of Chilimbi teaches the map of instruction addresses of claims 16

and 25. However, the call graph 500 of Chilimbi simply represents a graph of procedure calls in an exemplary program. It should be understood that a procedure call, particularly in name-only form, is not equivalent to an instruction address. Therefore, the Applicant submits that a graph of procedure calls, such as call graph 500 of Chilimbi, is not equivalent to a map of instruction addresses, particularly when the map of instruction addresses identifies correspondences between instruction addresses in the original code and instruction addresses in the instrumented code. Therefore, in contrast to the Office's assertion, the call graph 500 of Chilimbi does not teach the map of instruction addresses as recited in each of claims 16 and 25.

In view of the foregoing, the Applicant submits that Chilimbi fails to teach each and every feature of dependent claims 16 and 25. For a claim to be anticipated under 35 U.S.C. 102, each and every feature of the claim must be taught by a single prior art reference. Therefore, the Applicant again submits that each of dependent claims 16 and 25 is not anticipated by Chilimbi under 35 U.S.C. 102. Therefore, the Office is again requested to withdraw the rejections of dependent claims 16 and 25 under 35 U.S.C. 102.

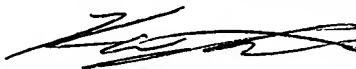
### **Rejections under 35 U.S.C. 103**

Claims 4, 7, 11, 14, 20, and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chilimbi in view of Marcuello et al. ("Marcuello" hereafter) (U.S. Patent Application Publication No. 2004/0154010). These rejections are traversed.

Because a dependent claim incorporates each and every feature of its independent claim, the dependent claim is patentable for at least the same reasons as its independent claim. Therefore, each of dependent claims 4, 7, 11, 14, 20, and 23 is patentable for at least the same reasons provided for its independent claim. The Office is requested to withdraw the rejections of dependent claims 4, 7, 11, 14, 20, and 23 under 35 U.S.C. 103.

The Applicant submits that all of the pending claims are in condition for allowance. Therefore, a Notice of Allowance is requested. If the Examiner has any questions concerning the present Amendment, the Examiner is requested to contact the undersigned at (408) 774-6914. If any additional fees are due in connection with filing this Amendment, the Commissioner is authorized to charge Deposit Account No. 50-0805 (Order No. SUNMP357). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,  
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